

SPACE REVIEW



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EDITORIAL

Many references have been made in the newspapers lately regarding the high altitude experimental H-test which is to be carried out by the U.S. Government. Prof. Sir Bernard Lovell, Director of the Jodrell Bank Experimental Station (Manchester University) has expressed his views very strongly against the holding of this test. The grounds for objection were approached solely from a scientific viewpoint. Prof. Martin Ryle, Director of the Mullard Radio Astronomy Observatory & Cavendish Laboratory (Cambridge University) also raised an objection to the effect that the proposed 500 mile altitude explosion was being made without proper consultation with the scientists whose work would be greatly effected. Many other experts also express fear that the H-blast could succeed in disrupting the Van Allen belt of radiation which encircles the earth and is of great scientific interest.

If the test takes place as planned, it will take at least 100 years for the radiation belt to reform. Years of research on cosmic radiation would be utterly wasted, and further to this, the earth itself could be subjected to ultra-violet radiation - an additional danger which will affect all terrestrial life.

Project West Ford 2 is also a headache to most researchers who specialise in space science - in particular, astrophysics and radio-astronomy. This project was briefly mentioned in the last issue of "Space Review" under the heading "No Junk in Space says Woolley." Metal needles will form a luminous belt and disrupt radio communications, but contrary to my earlier report, there is no reason to believe that a U.K. satellite is involved.

S. R. Stebbing,

SATELLITES

by J.G. Roberts

Orbiting Solar Observatory

On 7th March this year, a Thor-Delta rocket took off from Cape Canaveral, Florida and placed in orbit the first of a series of astronomical satellites designed to make observations of the universe from beyond the fringes of the Earth's atmosphere.

The Orbiting Solar Observatory, (OSO) was launched into a 33° inclined orbit having perigee and apogee heights of 340 and 370 miles respectively. The experiments carried in the S-16 satellite are:- University of California's neutron flux sensor and electron-proton analyzer; - Ames Research Center's materials experiment; - University of Colorado's high resolution Lyman-alpha spectrometer; - Goddard Space Flight Center's ultraviolet and X-ray spectrometer and a low-energy gamma-ray monitor; - University of Minnesota's soft gamma-ray solar monitor and University of Rochester's hard gamma-ray solar monitor.

OSO stands 37 inches high and weighs 440 pounds, being designed to make the best use of the booster rocket's payload volume. The body of the satellite consists of a wheel 44 inches in diameter to which are attached three arms holding a Fiberglass sphere containing nitrogen gas for the satellite's pin-control system. During the launch phase, these three arms are folded down around the top of the third stage motor. After the payload has separated from the booster section the three arms extend outwards making OSO's diameter 7-ft 8-in. The satellite's axial moment of inertia is therefore made larger than either of its

other moments and stability of the payload is increased. Prior to the third stage firing of the rocket, the third stage is spun around its vertical axis at a rate of 100 r.p.m., but after the satellite has been ejected from the booster into orbit, the spin is reduced to 30 r.p.m., at which rate it is maintained by the use of the nitrogen gas jets. The rotating wheel section of the satellite contains nine wedge-shaped compartments four of which contain electronic controls, batteries, telemetry, in-flight data storage and radio command systems. The other five sections contain scientific experiments.

Above the wheel-shaped section of the S-16, and at right-angles to it, is the stabilized section, semicircular in shape, which holds the array of silicon cells for the conversion of solar energy falling upon them into electrical power. Also contained in this section are the pitch control jet nozzles and the instrument package which is pointing directly towards the Sun. The entire stabilized portion of the OSO is fixed to the rotating base by means of a shaft passing through the wheel section's centre. The stabilized section is servo-driven by gas jets to ensure azimuth and elevation control.

The power requirements for S-16 is about 25.5 watts which is supplied during sunlit hours by the fan-shaped array of solar cells and during transits through the Earth's shadow by a series of nickel-cadmium batteries.

The OSO is circling the Earth every 96.15 minutes chiefly to obtain detailed information on the solar spectra in the ultraviolet and X-ray bands. OSO has been launched during a period of sunspot minimum and further launches are planned during the next eleven years in order that observations of the Sun may be made through the whole sunspot period. This launching of OSO 1 is the first time that scientists have been able to aim a scientific instrument at a body in space; in this case the Sun, while the instrument is in orbit. Accuracy of the attitude control aboard OSO 1 is to within 0.6 minutes of arc. Late this year OSO 2 will be launched carrying instruments to scan the Sun's image and produce an integrated picture of Solar phenomena.

National Aeronautics and Space Administration scientists have emphasized that the orbiting solar observatories are a part of a national programme of space research in which many universities and institutions are engaged. OSO's data concerning the Sun is given freely to anyone of any nation who can make use of it, as it is felt that, in this way, S-16's major programme of solar research can be most useful.

Tiros IV.....

The latest addition to the Tiros series of weather satellites is Tiros IV launched into a 48° orbit by a Thor-Delta booster from the Atlantic Missile Range, Cape Canaveral on February 8th this year. Among its many scientific instruments aboard the vehicle are TV cameras designed to transmit pictures of the earth's cloud cover as the satellite travels around the Earth during its 100 minutes long orbit. One of the cameras is equipped with a wide-angle lens able to cover an area 700 miles square, and the other has a new medium-angle Tegea Kinoptic lens, specially designed to take photographs of an area of the Earth 450 miles square with minimum distortion.

Some of the early photographs taken by Tiros IV showed the Great Lakes area of Canada and U.S.A. and in particular the ice-free areas of Lakes Superior and Michigan. U.S. Weather Bureau officials said that Tiros Satellites may be able to furnish photographs of sufficient clarity so that areas in the lakes which are free of ice may be mapped. The feasibility

of this new application of mapping is being tested by comparing Tiros' photographs with those taken by aircraft flying over the Great Lakes at the same time as the satellite's transit.

Further shots in the Tiros programme will be made in the early summer of this year (Tiros V), autumn (Tiros VI) and the final orbiting late this year or early in 1963 (Tiros VII). The second-generation meteorological satellite, Nimbus, will be placed in a polar orbit by a Thor Agena B booster in 1963 and will include six TV cameras in its payload. An advanced weather satellite, Aeros, which will orbit the Earth in the same time that the Earth rotates, therefore appearing as a fixed point in the sky, is under study by the National Aeronautics and Space Administration.

The Tiros satellites are built by the Radio Corporation of America for N.A.S.A. and the U.S. Weather Bureau.

N.B. Mr. Roberts is editor of the Preston & District Astronomical Society Journal. This is a very active society in the heart of Lancashire. Monthly meetings are held during the session October to May. For full particulars write to, Mr. C. Lynch, 51 Bispham Rd., Carlton, Poulton-le-Fylde, Lanes

SPACECRAFT AND THE OLD STRAIGHT TRACK

by Philip Heselton

When the French scientist, Aime Michel advanced his theory of orthoteny which was excellently described in his book "P.S. & the Straight-Line Mystery," it was one of the most important archaeological discoveries within recent times. However, there seemed to be something about orthoteny which had yet to be discovered. Many references have been made to the effect that spacecraft may travel along lines of magnetic currents; the places where these intersect are comparable to a cross-roads sign.

If we take this statement literally, it means that there are marks of some sort on the earth which possible occupants of extraterrestrial spacecraft could use as a guide during flight. The clue to the mystery lies, I think, in a book published in 1925 by Alfred Watkins called "The Old Straight Track." Alfred Watkins was a Hereford archaeologist and Past President of the 'Woolhope Naturalists' Field Club, as well as being a member of the Royal Photographic Society. In his book he describes some very interesting research which he has done regarding prehistoric landmarks, especially in Herefordshire, Radnorshire and Worcestershire. He discovered that many prehistoric landmarks, such as mounds, mark stones, beacons, and the straight sides of many old camps, fell in exactly straight lines. He also states that those old clumps of trees, ponds, and islands in lakes which are artificial, are also in alignment.

A surprising thing, however, is that churches, crosses, moats and castle mounds also fall in alignment; these relatively modern things could not possibly have had anything directly to do with the prehistoric alignments. However, this can be explained by the fact that many churches were built on ancient Pagan sites and these can often be traced back to prehistoric times when the alignments were probably laid out. The same often applies to crosses, but cannot account for moats and castle mounds being on the alignments. However, careful excavation often reveals that they are usually only enlargements on the original prehistoric mound or moat.

Here is the point, I think, to explain that there are many place-names associated with the alignments. Alfred Watkins did some research into this and found that the probable name given to the alignments was 'ley' and from now on I will call them 'leys'. There are, however, other names

associated with the leys; two of the commonest are Cole- and Dod-, which may be present as Cold-, Col-, Dod-, Dud-, Tot- or Tut-. The two names, Coleman and Dodman may have been the names of the people who built the leys. Thus there are the mark-points of mounds, standing stones, circular moats and beacon points and the confirmation points of churches, ancient crosses, alignments of present-day roads and tracks, fords in rivers and streams, clumps of trees, especially Scots Pines, cross-roads, edges of old camps, ponds and islands.

These briefly are the facts about leys, but there may be some of you who will refuse to believe they exist saying that the alignments are due to chance. However, their existence can be proved mathematically. In the Appendix (p. 259) of Michel's book, orthotonic lines are proved to be real by comparing them with lines made by sprinkling seeds at random on a map. A table was constructed showing the likelihood of many of the orthotonic lines being coincidental. Here, the angle allowed for error was $1\frac{1}{2}^{\circ}$, but with leys the angle of error rarely exceeds $1/4$ degree, so the chance that they are coincidental is very much reduced; the leys on the 1" Ordnance Survey map Sheet 170 are therefore regarded as purposely arranged.

Alfred Watkins wrote three books on the subject and formed a club to study leys. Unfortunately, however, the war put an end to its activities, and at the present time, there is not a single organisation devoted to the study of leys.

It was from J.A.D. Wedd, the organiser of the Star Fellowship that I first learned of the existence of leys; he had discovered several parallel alignments of Scots Pine Clumps - and during the past year, I have been doing some research in Surrey with the discovery of many leys.

There exist certain points on earth called 'magnetic centres' and the research of both Mr. Wedd and my own appear to confirm this, for many leys discovered in Surrey cross each other at one place, and in one case there are as many as seven leys which intersect at one point. Often there is a prominent clump of trees or a mound at the point.

Here is a list of some of the ley centres together with their grid references and number of leys which pass through them:-

Woking	TQ 014604 5	Thunderfield Castle	TQ 300426 6
Epsom	TQ 193609 6	Gill's Lap (pine clump)	TQ 468319 5
West Clandon	TQ 042513 5	Mark Beech	TQ 478425 3
St. Martha's (church)	TQ 028483 3	Chiddingstone	TQ 496448 6
Deerleap Wood (tumulus)	TQ 118480 4	Walton (church)	TQ 102665 3
Dorking	TQ 161487 3	Sunbury (church)	TQ 106685 3
Abinger Bottom	TQ 131447 4	Bedfont (church)	TQ 085737 3
Holmwood	TQ 171457 7		

When the ley pattern is marked on a map of Surrey, it is amazing how regular the pattern is. It is strongly reminiscent of the pattern of the orthotonic lines over France in 1954. A striking feature is the multitude of parallel and nearly parallel lines. There are ten leys having the general direction NW-SE. There are also several lines having the directions W-SW and S-NE. If readers of this article have a 1" Ordnance Survey map Sheet 170, they can probably find out most of them for themselves, if they remember that most leys pass through at least one centre. There does seem to be some definite pattern in the ley arrangements and the most convincing pattern is that of four parallel leys following the North Downs from west to east. I will mention one of these as it is

among the most striking leys I've yet found.

The ley starts at the Deerleap Wood Tumulus centre and follows a bearing of 80° towards the Kent border, passing through the Dorking ley centre. The ley passes exactly through seven churches, those of Westcott, Brockham, Betchworth, Oxted, Limpsfield, Westerham and Sundridge, as well as the castle mound near Barrowgreen Farm, Oxted, and the Scots Pine clump at Valence, Westerham. The ley is so obvious and exact that it is amazing that it has not been noticed before.

One never hears of leys mentioned in archaeological publications because the professional archaeologists have never heard of leys. If they knew about them, I feel sure they would consider them most important from their point of view, for, among other things, it may change all our ideas about early man. In spite of this, there is no group in the whole world to study leys. Because of this, I feel it is time to form a Ley Hunter's club and would like to ask the help of all readers of this article in this, either by sending in pertinent details of leys they have discovered for inclusion in a National Ley Index which is being compiled, or offering help in the formation of the club. Anyone interested please write to: 12, Heathcroft Avenue, Sunbury-on-Thames, Middlesex, enclosing, if possible, a stamped addressed envelope.

ATMOSPHERIC PRESSURE AND AERONAUTICS

by Henry Gallart

All inventions created by man for his betterment come from his mind. Man has forged in his mind many dreams and has made them come true through his skill and technical knowledge.

Today we have in our modern civilisation, automobiles, trains, ships and aircraft all using as a source of power the very products of nature transformed chemically to suit the needs of each; but we must remember also that nature has given us, through the hands of our Creator, an even more abundant supply of energy which man can use for his benefit: simply, it is atmospheric pressure.

Pressure is a force exerted on a body, whether this is a solid, a liquid or a gas. At sea level, the present value accepted by scientists is that of 14.7 pounds per square inch. It increases below sea level and decreases progressively as it extends above it.

We will now consider space ships and other aerial craft which have been observed in our skies. Their methods of propulsion may vary from a pro-gravity principle, a jet impulsed means, atomic energy, and last but certainly not least, the atmospheric pressure so abundant around each planet.

We will refer to the system using atmospheric pressure as being one employed within a planet's vicinity and not outside of it. How are we able to use this power found so freely around us? The answer lies in the creation of a vacuum around the ship - a vacuum being a zone of zero pressure of absolute and low pressure, when required. How is this vacuum created? It is brought into play through the emission of powerful cathodic rays coming from projectors distributed all around the periphery of the craft.

It is to be noted that this system is ideal for the saucer and disc-shaped craft, but not so for others. The amount of vacuum created depends upon the intensity of the current used at the time which could easily be controlled through rheostats. High current and voltage are necessary and one method of producing it would be through solar energy - also abundant

everywhere---accumulated in a way similar to our present satellites, but highly increased in intensity. Varying the current, directly affects the degree of vacuum.

If you want to check the thrust caused by atmospheric pressure, try it on a saucer-shaped disc of 60 ft in diameter by multiplying its area (this being πr^2 ----- π equal to the constant 3.1416 and r is the radius) by 14.7 remembering always to have the dimensions expressed in feet. The force resulting is over 3×10^3 tons - an immense and exorbitant amount, but undoubtedly true.

The disc can maneuver in any direction and still maintain its present speed simply by changing the vacuum to the desired angle of travel. The hovering so often observed in connection with these remote-controlled crafts is due to the fact that the vacuum is being maintained in a state of equilibrium. When an ascension thrust is exerted underneath the ship, it is propelled at a speed as yet unthinkable for our present conveyances.

Would the people inside a larger craft of this type be affected by such sudden changes? Not in any way if we take into consideration the fact that for every action there is an equal and opposite reaction, and every molecule of the entire craft, as well as the occupants within, are affected in exactly the same way; not the craft itself, for if such were the case, the ones inside of it would be crushed to pieces by the forces. It is proved, relative to the craft already in existence, that this is not the case.

Some of the rare abilities of the cathodic rays employed to create a vacuum are those of penetrating matter - enabling one to see through it; also the fact that the atmospheric elements are decomposed when contact with the rays happens to be made.

The vacuum is effective due to the ability of the atmosphere to absorb the ionized particles thus produced by the decomposition of its elements. Due to this ionisation, different colours would be seen on aerial craft which travel at night, varying themselves according to the degree of vacuum in use.

The travelling might be done in a semi-vacuum or even less, depending on the purpose in mind; but if an absolute vacuum is used, then the craft would no longer be within our range of vision and would appear to vanish in thin air.

Explosions are often heard in our skies in relation to metal discs etc. One possible reason might be a short circuit in a remote controlled craft or in a maneuvered one. A total current failure would certainly cut the source of power and thus, with a great thrust on one side and an equal one on the other (where previously we had a vacuum), the craft would return to its very elements indeed.

Atmospheric pressure is truly a marvellous system of transportation. Why hasn't it been used before on Earth? Well, because man has always taken advantage of the things he has considered more readily available to him, and so doing has by-passed this tremendous source of thrust, which could indeed bring the present state of mankind towards a higher and better living standard. Travel across the earth would be cheaper and easier and then man could understand his brother better as things now stand.

This may be the so-called "Free Energy" mentioned in various books. It is free, and it is energy; man has to find and re-discover practical methods of using it to his advantage, but at present, this doesn't bite his curiosity or inventive genius.

BOOK REVIEWS

The Planet Saturn, by A.F. O'D. Alexander, M.A., Ph.D., F.R.A.S., published in London, 1962 by Faber & Faber Ltd., 24 Russell Square, London, W.C.1. Net Price 63/-.

This comprehensive study is the first book of its kind devoted solely to the history, theory and observations of the planet Saturn. The hitherto unquoted works of the eminent Tycho Brahe are published in English for the first time.

Observations commence from about 650 B.C. right up to the present day with our modern telescopes and spectral equipment. Illustrations and photographic observations are included together with references sources, which are listed, not separately, but in the main text.

In my opinion, this book should be regarded as a leading textbook of Saturn as a specialised study, and unlike a number of science books at present on the market, "The Planet Saturn" should remain topical for many years ahead.

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1962 Yearbook of Astronomy, Editor, Dr. J.G. Porter, Associate Editor, Patrick Moore, F.R.A.S. Published in London, 1961 by Eyre & Spottiswoode Ltd., 22 Henrietta Street, London, W.C.2. Net Price 21/-.

This book should be bought immediately in order to gain maximum benefit of the purpose of publication, that is, the prediction of astronomical events for 1962.

The contributors include experts from the fields of both professional and amateur, such as Dr. R.H. Garstang, B.M. Peek and others.

The articles included are of popular interest and there's a chapter by P. Moore on the history and research of The Crimean Astrophysical Observatory in the U.S.S.R. - This establishment is well-known to readers of "Space Review."

This book is mainly suitable for the active amateur, but others will find something of interest in the general notes.

Lists of recent astronomical books, as well as recommended astronomical societies are published, including those operating in provincial towns. - Most readers will find these very helpful to keep by indefinitely.

Have you often pondered over the various astronomical terms? The ones used in the book, are interpreted in a separate glossary.

LETTERS

I was interested in your article on fireballs in 'Hermes' and Patrick Moore's reply. Comment: the editor no longer has a copy of Tacker's book and is unable to check the above statement. However, readers may obtain a copy of 'Hermes' by writing to, The Editor, John Lytheer, F.R.A.S., 1 Temple Ave., Shirley, Croydon, Surrey enclosing 3/-.

The case he disputes is one you said the USAF listed as unexplained. This was the James Stokes sighting in New Mexico. Please see p. 144 of Tacker's book under the heading of Alamogordo, New Mexico (press release of Nov. 15, 1957) for the official conclusion on this case. You will see just why Patrick Moore labelled it balderdash. Maybe the F.S.R. accepts it as authentic, but the USAF certainly does not.

Yours etc.,
C.D. Allan, Coventry

I was impressed with David Hardy's cover on No. 3, but your news item, "No Junk in Space says Woolley" has me puzzled. British satellites don't eject "needles" and how is one to tell just what is "junk" and what isn't? If Woolley really did say

continued overleaf/

what was printed, it only goes to confirm our suspicions that he knows about as much astrospace as Pamela Green.

Yours etc.,

J. G. Roberts, Blackpool.

Comment: The item referred to was Project West Ford 2, but the 'links' with Britain are military rather than scientific.

Prof. Sir Bernard Lovell also emphasised the dangers of space contamination by the orbiting metal needles. He states: "If space is turned into another military sphere we can forget about scientific research."

I received the first two issues of SR and must say I like them. However, I must remark upon the note you placed beneath my remarks about the Van Allen Belts. It is a matter of scientific knowledge that the orbit of these craft were planned to avoid the possibility of entering this type of radiation. It seems to be lowest in the South Pacific and even there it may not reach below the 400 mile altitude. However, the capsules which carried Gagarin, Titov and Glenn had an apogee not exceeding 187 miles. It is possible that even Abel and Baker, the two monkeys did not enter this zone of high proton energy. The fact that the U.S.A. has picked the Johnson Island area, because, it is at this point, the belt has been found to be at its lowest; may be the reason for the Ney-Kellogg proposal being put to a test.

The publication, "Missiles and Rockets" in their May 1961 issue asserted that radiation was the top flight hazard. To quote: "The biological significance of the multi-pronged stars found in nuclear emulsions exposed at high altitudes is not known. But such stars, resulting from the collision of very high energy particles with an atomic nucleus in living tissue, must represent a very damaging microscopic explosion of energy."

Radiation can only be measured in

terms of X-ray and Gamma-ray damage and prolonged exposure will be dangerous biologically and physically. Shielding is difficult since spacecraft cannot carry excessive weight. Morris F. Dow of General Electric's Space Science Laboratory has suggested that a thin saucer-shaped vehicle oriented edgewise to the radiation should be more effective than a sphere.

Yours etc.,

John J. Robinson, Jersey City.

A short time ago I was shown a copy of your interesting publication. Amongst other intriguing contents was an article by someone with the equivocal name of 'S. Erpent' who, inter alia, makes reference to the presence of 'dimolecular polystyrenes' in the atmosphere of Saturn. I am sure that chemists would like to be told more about this novel compound, as astronomers would wish to know more about other aspects of this original paper.

If it would not seem discourteous to say so, your contributors, or some at least of them, appear to be equally distinguished for the originality of their views, as well as of their names.

Yours etc.,

Henry Brinton, F.R.A.S.

Selsey, Sussex.

Comment: Our contributor was not listed in SR as 'S. Erpent.'

The article referred to was sent to a Professor of Astronomy at the University College, London before inclusion - publication was suggested.

'Dimolecular Polystyrenes' refers to a thick gaseous atmosphere from which meteoric ejection is not plausible.

I received with great pleasure the newest issue of SR. The title page is really very beautiful and artistic. I congratulate David Hardy for this excellent drawing.

Yours etc.,

Peter Hédervári, Budapest.

P.S. Sorry to say, I'm no "doctor!"

S P A C E L O G

by Brian S. Dean

Special Note: The U.S. Defence Dept., announced on March 23rd its new policy of not revealing any information on military satellite launchings. (In some cases, it isn't even revealed whether launchings are successful). These are therefore indicated below as classified....

April 6th--Cosmos II launched into highly elliptical orbit to check and improve elements of space vehicle construction and for scientific investigation of the outer space environment. April 9th--Successful launching of classified satellite by an Atlas-Agena B from Point Arguello. It contained an unclassified proton damage experiment to measure space radiation effects. April 12th--Launching of classified satellite aboard a Blue Scout from Cape Canaveral failed when the second stage failed to ignite. The satellite contained radiation experiments to provide data for the Vela Hotel programme for detecting nuclear explosions in space. April 17th--Classified satellite launched by Thor-Agena B from Vandenberg. April 25th: Successful launching of Saturn space-booster from Cape Canaveral. This was a first stage with dummy upper stages and is the first launching of what will someday be a 1.3 million lb. thrust booster for launching large manned satellite and moon vehicles. April 23rd-- Ranger IV was successfully launched from Cape Canaveral, but due to malfunction of a timer, no useful data was obtained. It finally hit the far side of the moon. April 28th-- Cosmos III was successfully launched to measure radiation belts, cloud patterns and other phenomenon. April 26th--Four launchings:-(1) the international satellite Ariel with a British payload of 6 experiments was launched by a Thor-Delta booster (2) Cosmos IV launched on a 1.25 million-miles trip and was then returned to earth (3) two classified satellites launched from Point Arguello. The boosters used were a Blue Scout and an Atlas - Agena B. May 8th--The Atlas-Centaur prototype disintegrated 54 seconds after launching from Cape Canaveral. The Centaur vehicle is the first of a series designed for a number of U.S. lunar and planetary exploration programmes. May 10th--The ANNA geodetic satellite failed to orbit when the second stage of its Thor-Able-Star booster failed to ignite. The 355 lb. satellite contained a flashing light beacon and other instruments to increase accuracy of measurements of the Earth's surface. May 15th. A classified satellite was launched from Vandenberg using a Thor-Agena B booster. May 24th--Scott Carpenter successfully orbited the Earth in his Aurora 7 Mercury capsule, followed by an unfortunate overshooting of the target by 200 miles. (Additional item: May 27th-- Cosmos V launched into a polar orbit. Speculated to transmit data on the Van Allen Belt.).

P A N O R A M A A N D L A T E N E W S

Ion-Propelled Satellites to Mars by 1980

Paris (Reuters)--American space researcher Dr. Ernst Stuchlinger says men might be able to make return trips to Mars in ion-propelled space vehicles by 1980 or 1985. Five ships would make the round trip together, from one to another in case of trouble, he said. Stuchlinger also stated that the journey to Mars would be made possible by the propulsion of ionized atoms. Laboratory tests of the ion propulsion systems have been carried out and the first space tests are due to take place at the end of the year. (The Province, 2nd April, 1962).

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Science Nears Earth Origin--Halifax (CP)--British astronomer, Prof. Sir Bernard Lovell said here on 14/4/62 that science is on the verge of deciding which of two conflicting theories about the origin of the universe is correct. Instruments should be able to tell within a few years whether an explosion 10 billion years ago formed the universe from a small mass of cosmic material, or whether the universe has always been the same in form. The radio telescope is so far unable to prove either theory. (Ref: The Vancouver Sun, April 16th, 1962.)

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Matter and Anti-Matter-- During the third week in March, two events took place in nuclear physics. Firstly, the creation and measurement of the elusive anti-xi-minus, the anti-particle of the xi-minus known also as the anti-cascade hyperon. Out of the fourteen known particles and their corresponding anti-particles, only one remains undetected; it is the hyperon known as the anti-xi-zero (which carries no charge). The second was the start of operations of the world's most powerful accelerator of electrons, sponsored jointly by Harvard University and the Massachusetts Institute of Technology.

The latest discoveries in anti-matter were made in cooperation with physicists working in the U.S.A., Switzerland and France.

Anti-matter is charged exactly opposite to the everyday particles known as neutrons, electrons, photons etc. It is now estimated that there exists an anti-universe made up of anti-particles which would instantly annihilate our universe if ever we came in contact with it...Oppositely charged particles have been observed to annihilate each other. (Reference: The New York Times, 18/3/62).

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8-Hour Shake of Globe Told by Geologists

The Earth was shaken for 8 hours on June 6th, 1961 by a "storm" of tremors greater than any previously recorded, a geologist disclosed on 6th April, 1962.

He was Dr. Jack Oliver of Columbia University's Lamont Geological Observatory. He stated further that the world wide disturbance which occurred at 27-second intervals has not yet been explained. He believes the tremors were generated by ocean waves striking the African coast in the Gulf of Guinea. Another theory blames shifting molten material beneath the Atlantic floor. (Ref: C.A. Honey, Hughes Research Laboratories, California, Cosmic Science Newsletter, June, 1962).

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300,000-Year-Old Skeleton Found

Oita, Japan. (UPI) 3/5/62.--Discovery of the skeleton of a Stone Age man - most ancient ever found in Japan - was reported on Japan's southernmost island of Kyushu.

The find was made by researchers headed by Takashi Tomikita, an assistant professor at Oita University.

More than 30 primitive stone implements were unearthed near the skeleton at a depth of about 12 feet near the mouth of the Ono River. The skeleton and crude tools are believed to be as much as 300,000 years old.

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Luminous Hydrogen Cover Discovered in Milky Way

London (Reuters)- Huge clouds of luminous hydrogen have been discovered in gigantic stellar systems of the milky way type, by a group of Soviet astrophysicists at the Crimean Observatory, the Soviet information service reports. These clouds were photographed for the first time with a new 98-inch telescope, using a method of electronic optical photography.

The astrophysicists have come to the conclusion that hot stars emitting

Pilot and Astronauts Observe Unknown Objects in Space

Mysterious discs sighted during the record-breaking 50 mile-high flight above the earth have been reported by American X-15 pilot Joe Walker. The discs showed up on film. Astronaut John Glenn and Soviet cosmonaut Herman Titov both reported sighting strange objects during their orbital flights. (Ref: Daily Mail, 12/5/62)

Hovercraft in Service This Summer

The Soviet Union's first hovercraft will go into service this summer. Seating 38 passengers in a spacious saloon, this 12-ton craft is 58-ft., long and 21-ft., wide.

It travels two to four inches above the water and is also able to hover over the ground. (Soviet News, 17/5/62).

Announcement -- Owing to the original low subscription fee of 4/-, funds have now practically run out. Because of this, advertising has been kept down to the minimum. Articles enclosing diagrams, illustrations, photographs etc., have been received, but unfortunately these cannot be reproduced due to extra expense. It would therefore be appreciated if readers would kindly donate towards these extra costs. Only by doing this, can SR increase its number of pages as well as the reproductions mentioned above. Readers wishing to donate should send cheques (checks) postal orders, cash, stamps etc., to, SPACE REVIEW, 2 Station Road, Frimley, Nr. Aldershot, Hants, stating specifically what the donation is for. Money will then be used for the purpose stated.

Earth is Pear-shaped -- The Daily Mail for May 29th states that recent data transmitted from satellite probes show the earth to be pear-shaped instead of an oblate sphere as was formerly believed. Further satellite data also indicates that the solar atmosphere extends at least 95 million miles. If it were not for the dense atmosphere surrounding our planet, the surface would have been subjected to intense rays of the ultraviolet frequency in which life, as we know it, could not exist.

Meteorite & Fireball Reports in Brief--Nottingham, 14/3/62. Glowing red fireball smashed through the window of a diesel train near Nottingham and showered passenger with sparks; other objects reported in northern island, U.S.A. and Canada during March and mid-April. Full reports later.

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